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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HAAS, WENDY C	

ART UNIT	PAPER NUMBER
1661	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/071,272	PENNER ET AL.	
	Examiner	Art Unit	
	Wendy C. Haas	1661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2005*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14 and 15* is/are allowed.

6)☒ Claim(s) *1-13, 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *19-39* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/24/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 16 – 18 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, applicants claim a method of generating heterozygous for seed coat color soybean seed by planting seeds of two different varieties in alternate rows. Fuller et al. teach that soybean plants are naturally self-pollinated plants that are estimated to cross-pollinate at a rate of less than one percent in an open planting. Accordingly, due to a low success rate of cross-pollination, generation of hybrids is not likely and would require additional undue experimentation.

Applicants' Specification discloses, in Example 8, that additional steps are required to produce the heterozygous seed claimed. Specifically, Applicants note that approximately 1% outcrossing occurs, and Applicants employ the use of herbicide to eliminate selfed conventional seed. Applicants then send the remaining seed through a color sorter to determine which seeds are selfed and which are hybrid crosses. These additional steps appear to be necessary to practice the invention. The Specification does not teach how to make and/or use the invention without these steps.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Raque ('349) or Raque ('621) in view of Wright et al., Olson and Williams.

Raque ('349) Raque teaches a seed mixture of 97% to 99% genetically modified foodplant seed and 3% to 1% seed of a variety of the same foodplant having a phenotypical difference. Raque also teaches dyeing the seed coats of the seed of the plants having a phenotypical difference to facilitate identification of these seed prior to planting them in the field.

Raque ('621) . Raque teaches a seed mixture of 90% to 99.999% genetically modified foodplant seed and 10% to .001% seed of a variety of the same foodplant having a phenotypical difference. Raque also teaches dyeing the seed coats of the seed of the plants having a phenotypical difference to facilitate identification of these seed prior to planting them in the field.

Raque ('349) and Raque ('621) do not teach determination of seed coat color using near-infrared spectrophotometry. They do not teach natural seed coat color as the phenotypical genetic difference between the seed types. They do not teach specific genetic make-ups or seed coat colors.

Wright et al. teach that use of NIR spectrophotometry to analyze constitutents of grains, including cell wall content, are known in the art [Col. 1, lines 25-35]. Seed coat color is predicated on the content of carotenoid and other pigments in cell walls.

Olson teaches that inclusion of multiple transgenic traits in genetically engineered plants is known in the art. [See second page, middle of page, " . . .multiple stacking of new biotech traits into one hybrid. Several such products are now on the market . . ."]

Williams teaches different seed coat colors and the genetic makeup of them in soybeans.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use, as suggested by the teachings of Wright et al., NIR technology to determine differences in seed coat color for any mixed group seeds of interest that must be segregated by seed coat color; all seed coat colors recited in claims 6-12 are known in the art (See, e.g., Williams.) It would also be obvious to use homozygous seeds, set forth in claim 2, since phenotyping would be less complex using a homozygous genotype, or to add more than one desired altered trait to the transgenic seed, as taught by Olson. Seed coats vary in nature and need not be dyed as suggested by Raque; the seed coat color itself can be an altered phenotypic trait.

One would be motivated to do this for several reasons. First, as taught by Wright et al. NIR technology can be integrated into mechanical farm equipment to measure the constituents of a sample. Second, NIR technology is capable of detecting sophisticated low-level differences in seed coat color for mixed seed samples that do not vary much in pigmentation to the naked eye.

A person of ordinary skill in the art would have an expectation of success in using NIR spectrophotometry to determine seed coat color because it was a preferred method in the art for analyzing grain constituents at the time of invention.

Raque provides motivation for readily identifying genetically altered seed in the form of preventing crop loss due to erroneously spraying herbicide on conventional crops; Olson teaches the high financial stakes currently at issue in the seed industry.

As such, the invention as a whole was prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Stroud, Knox or Steyer in view of Wright et al. and Olson.

Stroud teaches the mixture of multiple varieties of genetically altered soybean seeds with conventional soybean seeds in Cargill, Inc.'s grain elevators in and prior to the year 2000. Stroud also teaches a total genetically altered soybean crop percentage of 56.3% in 1999.

Knox teaches the wide use of genetically modified soybean seed and the lack of segregation between this seed and other soybean seed in mixtures more than one year prior to applicant's filing date.

Steyer teaches that prior to late 1999/early 2000 genetically modified and standard soybean seeds were treated alike in mixtures in grain elevators nationwide.

Stroud, Knox and Steyer do not teach specific concentrations of different types of soybean seeds in mixture at any given time. However, any combination of percentages of

genetically modified seed, non-modified seed, seed coat colors, etc. of seeds known in the art is contemplated by mixture of genetically modified seed and non-modified seed.

Stroud, Knox and Steyer also do not teach stacking of multiple genetic traits or use of NIR spectophotometry.

The teachings of Wright et al. and Olson are set forth above.

Stroud, Knox and Steyer teach mixtures of all varieties of soybean seeds, both transgenic and not transgenic in grain elevators nationwide from the year 1996 until the year 2000. Due to the large scale of the United States soybean crop, any combination of soybean seeds known in the art in any ratio of percentages is reasonably anticipated by these references for a specific moment in time. Though the Examiner may not find explicit prior art reference to the particular ratios claimed, they are within the bounds of and obvious in light of the prior art cited.

As such, the invention as a whole was prima facie obvious to a person of ordinary skill in the art at the time the invention was made.

Response to Applicant's Arguments

II. The corrected Declaration is accepted.

III. The objection to Claim 3 is withdrawn.

IV. The claim rejections under 35 U.S.C. § 101 are withdrawn.

V. Applicants' arguments, in response the rejections to Claims 14 and 15 under 35 U.S.C. § 112, first paragraph have been considered and are accepted.

Applicant's declaration regarding the browning effect set forth in Takahasi et al. was directed to Claims 16-18. However, it has been considered, and in light of the declaration and

the disclosure of Hurburgh et al. The Examiner is convinced that both humans and NIR machines can tell seeds that exhibit an environmental browning effect apart from those that display a next-generation seed coat color difference.

Applicant's arguments regarding claims 16-18 have been considered and are found unpersuasive for the reasons set forth above.

VI. The § 112, second paragraph rejections of record are dropped.

VII. The rejections under 35 U.S.C. § 102(b) are dropped.

VIII. Raque explicitly discloses a mixture of seeds with seed coat color differences. The seeds are dyed, but this does not necessarily teach away from the present invention. The idea of telling genetically modified seed apart from other seed in a seed mixture has been presented. This, in combination with the other teachings set forth in the rejection render the claims obvious.

Allowable Subject Matter

Claims 14 and 15 are allowable.

Conclusion

Claims 16-18 appear to be free of the prior art and would be allowable if additional steps are incorporated as noted above.

References Cited

The references cited but not applied in any rejection herein are set forth to show the state of the art.

Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wendy C. Haas whose telephone number is (571) 272-0976. The examiner can normally be reached on Monday through Friday 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. C. Haas
Patent Examiner
Art Unit 1661